

Petition for Rule Making
Of Global Frontiers, Inc.

EXHIBIT NO. 1

Letter dated April 23, 1998, from
Chairman William E. Kennard of the
Federal Communications Commission to
Chairman W.J. (Billy) Tauzin of the
Subcommittee on Telecommunications
U.S. House Commerce Committee



FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON

April 23, 1998

OFFICE OF
THE CHAIRMAN

The Honorable W. J. (Billy) Tauzin
Chairman
Subcommittee on Telecommunications, Trade and Consumer Protection
Committee on Commerce
U. S. House of Representatives
316 Ford House Office Building
Washington, D.C. 20515

Dear Mr. Chairman:

The Federal Communications Commission has been preparing for an auction, which was tentatively scheduled to begin May 27, 1998, for the new General Wireless Communications Service (GWCS) in the 4660-4685 megahertz band. I have substantial concerns about this proposed auction, which I would like to bring to your immediate attention.

The Omnibus Budget Reconciliation Act of 1993 (1993 OBRA) provided the initial authority for the FCC to conduct auctions and required, among other things, that the FCC auction and license at least 10 megahertz of transferred Government spectrum by August 10, 1998. The FCC partially fulfilled this requirement in 1997 when, pursuant to the Omnibus Consolidated Appropriations Act, 1997, it auctioned and licensed 5 megahertz of transferred Government spectrum for the Wireless Communications Service. The GWCS band, which was reallocated from Federal Government use pursuant to the 1993 OBRA, provides the only possible source from which the FCC can fulfill its obligation to license by auction an additional 5 megahertz of spectrum.

My concerns stem from an apparent lack of current public demand for licenses in the GWCS band. This absence of demand was revealed when, in preparation to auction licenses for the 25 megahertz GWCS band, the FCC sought public comment on a proposal for revised auction rules and, as required by the Balanced Budget Act of 1997, on methods for preserving reserve prices or minimum opening bids. (See enclosed background paper.) The public provided no written responses to these notices. This lack of response is unprecedented in the FCC auction program. The public has shown considerable interest at the early stages of all of the FCC's prior auctions, even those in which final auction revenues were lower than projected by the budget process, such as in the Wireless Communications Service.

FCC staff confirmed the low demand for GWCS spectrum by informally surveying Wall Street financial analysts. The analysts suggested that one of the factors suppressing current demand for GWCS licenses is the small size of the spectrum block, isolated from existing commercial mobile and fixed services. FCC technical staff agrees with that assessment. Another factor dampening interest in the GWCS spectrum is the potential interference to GWCS from Government systems in nearby bands. The spectrum immediately above 4685 megahertz and immediately below 4635 megahertz is used by the Navy for defense purposes. High-powered

Navy systems operate adjacent to the GWCS band in a large number of service areas that might otherwise attract GWCS bidders. GWCS licenses could reduce Navy system interference by installing expensive radio filters, however, the nature and location of the interference make it impossible to eliminate the problem completely.

Notwithstanding this difficulty, the FCC might have more success if it conducted an auction of a larger 50 megahertz block that would include the GWCS 4660-4685 megahertz band together with the adjacent 4635-4660 megahertz band, which was transferred from Government to private use in 1997. Interest in this larger block might be greater, in part, because the bands could be offered as pairs of channels for separate transmit and receive channelization.

The FCC would not be able to implement this solution, however, in time for the August 10, 1998, deadline. The FCC received the second 25 megahertz block from the National Telecommunications and Information Administration only last year and has not yet completed the rulemakings necessary to govern the spectrum's licensing and use. Consequently, that block will not be auctionable until sometime in 1999. Another factor making it difficult to conduct a combined auction within the existing statutory schedule has been the pendency and issuance of a General Accounting Office report, Defense Communications: Federal Frequency Spectrum Sale Could Impact Military Operations, GAO/NSIAD-97-131 (June 1997). This report and the preceding GAO investigation have created uncertainty and delays in FCC preparation of the GWCS spectrum for auction.

Neither the 1993 OBRAs nor its accompanying Conference Report provides any guidance as to whether Congress intended to afford the Commission any flexibility or discretion with respect to the August 10, 1998, auction and licensing deadline. In fact, this particular provision, codified as Section 309(j)(9) of the Communications Act, was not in the House nor the Senate versions of the final budget legislation. The provision was added later by Conference agreement, with no legislative history to assist the FCC in its implementation.

The auction obligation presents the Commission with a dilemma. The Commission can conduct a GWCS auction and meet the deadline, but it would risk inefficient assignment of our nation's spectrum resources as well as disappointing results from a purely budgetary perspective. It would be preferable instead if the Commission had the flexibility to combine the two bands for a single auction, which would take place after August 10, 1998. I believe that this option would better serve the public by increasing the likelihood of interest in the GWCS spectrum.

Accordingly, I seek your guidance as to how to proceed and look forward to discussing this matter with you.

Sincerely,

William E. Kennard

William E. Kennard
Chairman

Enclosure

I would appreciate your views on this.
W

04/16/98

Background Paper--4.6 GHz Band

Under a provision of the Omnibus Budget Reconciliation Act of 1993 (1993 OBRA), the Federal Communications Commission (FCC) is required by August 10, 1998, to issue licenses for at least 10 megahertz of spectrum that have been reassigned from Government use pursuant to part B of the National Telecommunications and Information Administration Organization Act (see 47 U.S.C. § 309(j)(9)). In April 1997, in partial fulfillment of this requirement, the FCC auctioned 5 megahertz of spectrum in the Wireless Communications Service (WCS) and assigned licenses accordingly. To complete the requirement, the FCC has planned to auction licenses for the General Wireless Communications Service (GWCS) in the 4660-4685 megahertz band.

Available Former Government Spectrum

The GWCS band (4660-4685 megahertz) is the only remaining spectrum from which the FCC can fulfill its requirement to auction an additional 5 megahertz of former Government spectrum by August 10, 1998. In addition to the GWCS band, the FCC has received from the National Telecommunications and Information Administration (NTIA) a total of 70 megahertz of former Government spectrum pursuant to part B of the National Telecommunications and Information Administration Organization Act; however, none of that spectrum is available and suitable for auction. At the time the 70 megahertz were transferred, 50 megahertz were already in use by unlicensed Part 15 devices; Industrial, Scientific, and Medical equipment; and radio amateurs, and thus could not be auctioned. An additional 10 megahertz were allocated in 1995 to unlicensed Personal Communications Services devices. Five megahertz (2305-2310) were auctioned for WCS under mandate of the Omnibus Consolidated Appropriations Act, 1997. These are the 5 megahertz with which the FCC has partially fulfilled its 10 megahertz requirement. NTIA has indicated that the remaining 5 megahertz block at the 2300-2305 band carries constraints necessary for the protection of NASA's Deep Space Network and Planetary Radar operations at Goldstone, California. In addition this band is used by radio amateurs for weak signal (sensitive) reception. Moreover, this band is small and isolated. Thus, little commercial interest in the 2300-2305 megahertz spectrum is likely.

FCC Preparations for GWCS Auctions

Since last summer, the FCC has continued its preparations to auction licenses in the GWCS spectrum and assign licenses by August 1998. By Public Notice, December 17, 1997, the FCC published key information for potential applicants for GWCS. The FCC stated that the competitive bidding will be for 875 GWCS licenses, that is, five licenses of five megahertz each in each of 175 service areas, patterned largely after the Commerce Department's Economic Areas. Short-form applications to participate in the auction are due on April 28, 1998; upfront payments are due May 11, 1998. The auctions are scheduled to begin on May 27, 1998. The Public Notice also alerted the public to several matters important to participation in the auction, including the fact that potential applicants for GWCS licenses should be aware of Government operations in adjacent frequency bands and in certain geographic areas. Although the GWCS

band is currently vacant. Government systems, specifically, high-powered, classified Navy systems, will continue to operate adjacent to the GWCS band. This fact should be taken into account by potential bidders in designing GWCS services and planning auction participation.

In December 1997, the FCC sought public comment on a proposal to replace the GWCS auction rules, originally adopted more than two years ago, with more standardized and streamlined auction rules, which were recently adopted. The FCC indicated that it believed that GWCS auction participants should benefit from the experience gained in the 15 auctions conducted to date.

In January 1998, the Navy declassified technical information, including radiated power, for the Navy system and also identified geographic areas in the continental U.S. where the Navy system would continue to operate. The FCC published this declassified technical information in a Public Notice, January 30, 1998, and identified the GWCS service areas lying in proximity to Navy operating areas. Over half of the GWCS service areas may be affected by the Navy system. That same Public Notice sought comment on reserve prices or minimum opening bids as required by the Balanced Budget Act of 1997.

Lack of Interest in GWCS Auction

The public response to these Public Notices and to the proposal for refining the GWCS auction rules was extremely disappointing. While the FCC received a few general public queries by phone, there were no written comments or replies to any of these preliminary steps in the process of auctioning the GWCS licenses. This lack of public response is remarkable in view of the fact that there has been considerable interest shown at the early stages of all prior auctions, even those where revenues were lower than predicted by the budget process, such as for WCS. This lack of public response is an indication of little or no current interest in this service or band. Consequently, the competitive bidding process for the 875 GWCS licenses is likely to have few applicants and bidders, and may yield disappointing auction revenues from a budget perspective.

There are several possible reasons for this apparent lack of interest:

- Although the band is vacant, potential bidders may believe that the possibilities for commercial development of this 25 megahertz GWCS band are unacceptably restricted because of the operations of the Navy system in adjacent bands and in over half of the service areas. The presence of these Navy systems would increase the cost to develop viable commercial uses of the GWCS band.
- The GWCS band is not sufficiently near other spectrum bands where commercial equipment is already available.

- The market may be exhibiting a wait-and-see attitude. There is a band of spectrum transferred from the Government at 4635-4660 megahertz that is adjacent to the 25 megahertz GWCS band scheduled for auction in May 1998. The two bands could be combined for a total of fifty megahertz, that is 4635-4685 megahertz. (The Navy system operates immediately outside this band.) The interest and revenue generated by this block of fifty megahertz would be higher than that generated by two 25 megahertz blocks, one reason being that the bands could be offered as pairs of channels for separate transmit and receive channelization. However, the FCC is not able to complete its preliminary auction processes in time to associate the second 25 megahertz with the GWCS spectrum and auction them together to meet the statutory deadline.

The FCC informally surveyed several Wall Street financial analysts concerning the prospects of potential GWCS bidders accessing capital markets. Their responses revealed that those analysts who were aware of GWCS and the planned auction did not consider the information important and viewed the GWCS auction as a potential repeat of the WCS auction with minimal participation and minimal bidding. They cited several points:

- GWCS spectrum is not sufficiently close to spectrum for broadband mobile licensees such as cellular and broadband Personal Communications Services directly to benefit from the existing base of mobile technology and equipment;
- The service would not have enough spectrum to compete in a broadband fixed wireless market with the upperband licensees like Winstar, Teligent, and Local Multipoint Distribution Service licensees;
- Manufacturers have not yet developed plans for equipment in this GWCS band;
- There is almost no interest among existing commercial mobile radio service licensees.

For whatever reasons, the lack of public response should be taken as an indicator that this auction is likely to fall considerably below expectations for innovative uses or for revenues for spectrum transferred from Federal Government use to non-government use, as envisioned in the 1993 OBRA.

Chronology of Key Actions in the 4.6 GHz Band

• 1994

- Feb NTIA identified 4660-4685 MHz for reallocation as part of an initial immediate release of government spectrum mandated to be transferred per pursuant to 1993 OBRA. Also, the lower adjacent 4635-4660 MHz band was targeted for reallocation in January 1997.
- May FCC released a notice of inquiry on the initial 50 MHz including the 4660-4685 MHz band, seeking comments on spectrum use.
- Aug All Federal operations were removed from 4660-4685 MHz.
- Oct President informed FCC that all frequency assignments had been withdrawn from the bands that include 4660-4685 MHz and that the National Table of Allocations had been modified.
- Nov FCC released notice of proposed rule making, proposing broad and general allocation, viz., Fixed and Mobile services.

• 1995

- Feb NTIA finalized reallocation of 4635-4660 megahertz for private use (NTIA Final Report).
- Feb FCC allocated 4660-4685 MHz for Fixed and Mobile services. FCC proposed service and auction rules for 4660-4685 MHz as new General Wireless Communications Service (GWCS).
- Aug FCC formally created GWCS in 4660-4685 MHz band, adopting service and auction rules.

• 1996

- Jan Department of Defense (DOD) informed NTIA and FCC that the military system in bands adjacent to the 50 MHz at 4.6 GHz could operate successfully in spite of the loss of 50 MHz; however, DOD expressed concerns that if the FCC permitted susceptible commercial receivers in the 50 MHz, then the military system would have to enlarge the protective guard bands, thereby setting aside a significant amount of spectrum that would not be in use. DOD suggested imposing commercial receiver standards.

- Mar As required by the 1993 OBRA, FCC approved general Plan for Reallocated Spectrum, i.e., spectrum in addition to the initial 50 MHz made immediately available, and included the 4635-4660 MHz band for rule making in 1996.
 - Nov General Accounting Office (GAO) initiated inquiry into possible impairment of military systems resulting from transfer of government spectrum, namely, the 4.6 GHz spectrum.
 - Dec Draft FCC memorandum opinion and order on reconsideration for the GWCS service rules was placed on circulation with FCC Commissioners.
- 1997
- Jan FCC redrafted memorandum opinion and order on reconsideration for the GWCS service rules and placed it on hold.
 - Feb President informed FCC that all frequency assignments had been withdrawn from the 4635-4660 MHz band and that the National Table of Allocations had been modified accordingly.
 - Apr GAO distributed for comments a draft report recommending suspension of auction of 50 MHz of spectrum at 4.6 GHz and other transfers of spectrum.
 - May FCC critiqued the draft GAO report and pointed out the statutory requirement to assign licenses by August 1998 and the necessity for FCC to begin auctions promptly in order to carry out this requirement with the GWCS spectrum.
 - Jun GAO released final report (Defense Communications: Federal Frequency Spectrum Sale Could Impair Military Operations, GAO/NSIAD-97-131 (June 1997)) with a recommendation that the FCC suspend auction of 50 MHz of spectrum and other transferred spectrum.
 - Aug FCC Chairman responded to GAO recommendations to GAO, Office of Management and Budget, and Congressional committees, pointing out that Congress had obliged the FCC to assign licenses by the August 1998 statutory deadline.
 - Nov FCC requested technical and operational information from NTIA by end of 1997 on military system in bands adjacent to the 4.6 GHz spectrum in preparation for public dissemination of information necessary to prepare for auctions of spectrum at 4.6 GHz.
 - Dec FCC proposed replacement of GWCS auction rules with more recent, standardized and streamlined rules.

-Dec FCC issued public notice with scheduling information for potential GWCS applicants including start date for GWCS auction, May 27th. Public alerted to operations of military system in adjacent frequency bands and for certain geographic areas.

•1998

-Jan NTIA transmitted to FCC technical and operational information on military system adjacent to 4.6 GHz spectrum.

-Jan FCC issued public notice (1) requesting comment on reserve prices or minimum opening bids as required by Balanced Budget Act of 1997 and (2) publishing detailed information on radiated power from military system operating adjacent to GWCS band and on GWCS service areas within proximity of operations of military system. No comments received in response to notice.

Petition for Rule Making
Of Global Frontiers, Inc.

EXHIBIT NO. 2

Letter dated March 30, 1999, from
Assistant Secretary Larry Irving of the
U.S. Department of Commerce to
Chairman William E. Kennard of the
Federal Communications Commission



UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Communications
and Information
Washington, D.C. 20230

MAR 30 1999

The Honorable William E. Kennard
Chairman
Federal Communications Commission
The Portals
445 Twelfth Street, S.W.
Washington, D.C. 20554

Dear Chairman Kennard:

On behalf of the President, I am transmitting the Statement of Reasons for reclaiming the 4635-4685 Megahertz (MHz) band, which had been reallocated to the private sector in response to the Omnibus Budget Reconciliation Act of 1993 (OBRA-93), and identifying as substitute alternative spectrum, the 4940-4990 MHz band.

In 1995, the National Telecommunications and Information Administration, in coordination with the Federal agencies, identified the 4635-4685 MHz band for reallocation from Federal use to private use on an exclusive basis. Based on information derived subsequent to OBRA-93 reallocation decisions, the Department of Defense has concluded that the loss of this spectrum would seriously jeopardize the national security interests of the United States. As set forth in the enclosed Statement of Reasons, the loss of this spectrum would impact the operational capabilities of the Navy's Cooperative Engagement Capability (CEC) Program, which is a vital component to national defense.

The reclamation of the 4635-4685 MHz band and the substitution of the 4940-4990 MHz band will avert the operational impact to the Navy and preserve the monies already expended in the \$3 billion CEC Program. Further, this substitution will neither disrupt nor displace any private sector entities. Although the Federal Communications Commission has reallocated the 4660-4685 MHz portion of the 4635-4685 MHz band to the General Wireless Communications Service (GWCS), it has not yet conducted an auction of this spectrum or issued any commercial licenses in this portion of the band. Thus, there is no cost to the private sector associated with the frequency band substitution.

If you have any further questions, please do not hesitate to let me know.

Sincerely,

A handwritten signature in cursive script that reads "Larry Irving".
Larry Irving

Enclosure

STATEMENT OF REASONS

Introduction

In 1993, Congress passed the Omnibus Budget Reconciliation Act of 1993 (OBRA-93), which required under Title VI, the identification of at least 200 MHz of Federal spectrum for reallocation to private sector uses. The intent of the Act was to benefit the public by promoting the development of new emerging telecommunications technologies, products and services. The procedures of OBRA-93 included a number of band-identification criteria intended to achieve a reasonable balance between providing new spectrum resources for the public while providing adequate safeguards for incumbent Federal services. These safeguards included, among others, authority for the President to substitute alternative spectrum for spectrum reallocated under the Act.

In 1995, the National Telecommunications and Information Administration (NTIA) issued a report, pursuant to the requirements of OBRA-93, that identified a total of 235 MHz of Federal spectrum for reallocation.¹ The final reallocation plan took into account comments from the public and was prepared in coordination with all Federal agencies that are major users of Federal spectrum. The reallocation plan included a 50 MHz band segment from 4635 to 4685 MHz, a band which is used predominantly by the Department of Defense. The Navy's Cooperative Engagement Capability (CEC) system² is being developed to operate in this band.

Presidential Authority to Substitute Spectrum

The provisions of OBRA-93 authorize the President to substitute alternative frequencies for those identified in the original reallocation plan under certain circumstances and following certain procedures. See 47 U.S.C. §§ 924(b), 926. To substitute alternative frequencies, the President must determine that one or more of the following circumstances exists:

- (A) the reassignment would seriously jeopardize the national defense interests of the United States;
- (B) the frequency proposed for reassignment is uniquely suited to meeting important governmental needs;
- (C) the reassignment would seriously jeopardize public health or safety;
- (D) the reassignment will result in costs to the Federal Government that are excessive in relation to the benefits that may be obtained from commercial or other non-federal uses of the reassigned frequency; or
- (E) the reassignment will disrupt the existing use of a Federal Government band of frequencies by amateur licensees.

¹ National Telecommunications and Information Administration, U.S. Department of Commerce, NTIA Special Publication 95-32, *Spectrum Reallocation Final Report* (Feb. 1995).

² The CEC system provides for self-defense among ships engaged in areas close to land through distribution of common radar and other data to all Cooperating Units in the battle group.

The President must submit a statement of reasons for taking such action to the Federal Communications Commission, the Committee on Commerce of the House of Representatives, and the Committee on Commerce, Science and Transportation of the Senate, 47 U.S.C. § 924(b)(1)(B). If the frequencies to be reclaimed for Federal Government use have been allocated or assigned by the Commission, the statement of reasons must also include a timetable for transition for private sector licensees and estimated costs of displacing such licensees, 47 U.S.C. § 926(b)(2).

Determination of Jeopardy to the National Defense Interests of the United States

Based on information derived subsequent to the OBRA-93 reallocation decisions,³ the Department of Defense has now concluded that the loss of the 4635-4685 MHz band within the spectrum used for the CEC Program would seriously jeopardize the national security interests of the United States (see Annex A). The loss would impact the operational capabilities of the CEC Program in two respects: (1) it represents a potentially significant decrease in radio frequency (RF) bandwidth available to CEC; and (2) it raises significant adjacent band interference concerns with non-government users.

Impact on the CEC Program from a Reduction in RF Bandwidth

The loss of the 4635-4685 MHz band results in a potentially significant decrease in the overall RF bandwidth available to the CEC Program. The operational impact of the decrease in the RF bandwidth available to CEC includes a decrease in the number of Cooperating Units (CU)⁴ that can simultaneously participate in a CEC network. This decrease degrades the overall warfighting capabilities of the network, the individual CUs that comprise the network, and the individual combatants that must be purposely omitted from the network. The Chart in Annex B illustrates the complex environment of the littoral battlefield in which the CEC system is expected to operate. A realistic war-battlefield scenario includes friendly, hostile, and neutral forces; advanced cruise missile, electronic-warfare, and tactical ballistic missile threats; and a multitude of allied combatants with multiple sensors and weapons that must be closely coordinated.

³ As described in a report by the Government Accounting Office, the Navy began research on the CEC system in the 1980's, which was significantly expanded and converted to an acquisition program in 1993. See *Defense Communications, Federal Frequency Spectrum Sale Could Impair Military Operations*, GAO/NSIAD-97-131 (June 1997). In 1993, Congress also directed the Army and Air Force to study CEC's potential to support joint air defense operations and theater ballistic missile defense missions. In his testimony on the fiscal year 1997 budget, the Secretary of Defense identified CEC as a high-priority program and directed its accelerated development because of its great potential for increasing the war-fighting capability of joint service operations. *Id.* at 6.

⁴ Cooperating Units include, but not limited to, ships, aircraft, and land units in a battle group in which the CEC system distributes the same radar and other data to provide each unit with the same near real-time composite picture of the battle environment.

The exchange of sensor and weapon data is the critical function that allows individual combat units participating in a CEC network to have identical tactical pictures resulting in: (1) increased warfighting capability by forming a composite sensor track and identification data base that facilitates the use of advanced tactics and doctrine and (2) increased warfighting effectiveness by functioning as a single, coordinated battle force. The total RF bandwidth required for a network depends on the number of combatants participating in that network, and likewise, the number of CEC units which can participate in a network is limited by the RF bandwidth available.

Maximum war fighting effectiveness and capability are achieved when the greatest number of units participate in CEC. Since CEC is designated for deployment aboard all U.S. Navy major combatants and E-2C aircraft, a significant number of units will be required to participate in CEC networks. Additional CEC units are expected to be added to the networks with addition of joint service units in the near future. To achieve these large CEC networks requires a significant total RF bandwidth.

The result of a spectrum allocation to CEC that supports participation of less than the maximum number of units will be that a battle force commander must decide which elements of the battle force to omit from CEC. For each unit omitted, CEC effectiveness is reduced, and consequently, the warfighting effectiveness of the battle force is reduced. Likewise, the warfighting capability of each combat element omitted from CEC is underutilized.

A second major impact of a reduction in the spectrum allocated to CEC is the effect on training and, consequently, combat readiness. The comprehensive training required to provide operational readiness in all of the capabilities of CEC is essential for effective deployment under both peacetime and wartime conditions. This training includes the development of operational tactics and doctrine to ensure that a battle force operates as a single, cohesive combat unit, and realizes full CEC potential.

Because of the Department of Defense doctrine to train as they fight, the participation of the maximum number of CEC units is essential to realize full warfighting effectiveness. Comprehensive training with the maximum number of units is essential for a unified battle force to become thoroughly familiar with all CEC capabilities and, as a result, achieve full combat readiness. Additionally, this training must be accomplished in geographic areas that simultaneously: (1) provide environments that simulate the littoral conditions under which future conflicts are expected to occur; and (2) minimize the exposure of training forces to both security and safety risks. The coasts of and areas within the United States and Possessions provide such geographic areas.

To accomplish this training in the appropriate environment requires that adequate frequency spectrum be available to CEC both along the coasts as well as inland. A decrease in frequency spectrum available to CEC forces results in training with reduced numbers of units participating in exercises along the coasts of or within the United States. The only other options are more difficult and expensive in terms of time and cost and include training: (1) in an open ocean environment, (2) at a remote littoral location outside of the United States to accommodate large numbers of units, or

(3) with increased reliance on computer modeling and simulation.

Training with reduced numbers of units reduces operational readiness. An open ocean environment precludes training with ground forces of the U.S. Army or U.S. Marine Corps, and does not provide a realistic littoral environment that are representative of locations in which future conflicts are expected to occur. Training in littoral environments outside of the United States risks compromise of both security and safety, and adds to the cost and length of deployment from home ports. The risks associated with training simulations are not fully identified.

Adjacent Band Interference Considerations

Because the 4635-4685 MHz band is in the center portion of the spectrum used for the CEC Program, its loss also raises significant concerns regarding adjacent band interference with non-government users of the reallocated segment. Because of the relatively high transmitter power of the CEC and the undefined nature of the non-government receivers, adjacent band interference conflicts are likely to occur, requiring technical or operational constraints to assure satisfactory performance. These adjacent band interference constraints may be required on both sides of the reallocated segment when that segment is located near the center of the CEC RF band.

The electromagnetic compatibility between the CEC and potential systems that will be operating in the adjacent bands is a function of the type of architecture selected for the commercial receiver design, the bandwidth of the commercial receiver, and the technology and design selected for filters incorporated within the commercial receiver, among other factors. Adjacent band interference can be reduced with proper architecture and filter selection for the commercial receiver. However, this process could increase the cost of the commercial systems. Since Federal Communications Commission regulations do not mandate that commercial receivers achieve some standard of interference rejection, a commercial system will normally be designed to optimize factors such as performance, cost or size.

These adjacent band interference concerns can be partially mitigated by relocating the reallocated segment from near the center of the CEC RF band to the upper edge of the CEC RF band as this Presidential substitution does. In this case, potential adjacent band interference between the CEC and non-government systems can only occur on one side of the reallocated segment. This would result in fewer instances of adjacent band interference and reduced frequency coordination requirements. To further reduce adjacent band interference, pertinent CEC technical parameters are provided to potential users in the band (see Annex C).

Substituted Spectrum

The 4940-4990 MHz band at the upper edge of the CEC spectrum is being substituted for the 4635-4685 MHz band at the center of the CEC spectrum for exclusive non-Federal use. Upon completion of rulemaking by the Federal Communications Commission reallocating the substituted band, current Federal assignments supporting fixed and mobile services (see Annex D), except radio

astronomy operations,⁵ will be withdrawn or limited in accordance with the procedures defined by OBRA-93. Withdrawn Federal assignments could be potentially re-tuned in the lower portion of the 4 GHz fixed and mobile services band (i.e., 4400-4940 MHz).⁶

This substitution will significantly reduce adjacent band interference conflicts between the CEC program and adjacent non-government spectrum users since only one side of the reallocated segment will be involved. Additionally, the relocation of the commercial segment to the upper edge of the band reduces the CEC radiated out of band emission levels across the segment. Designers of commercial systems will then be able to implement less stringent designs and, consequently, reduce the cost to operate in the presence of those emissions.⁷

Potential Effect on Private Sector Licensees

The Federal Communications Commission has not issued licenses in the 4635-4685 MHz band, and therefore, this substitution will not displace or impose costs upon private sector licensees.⁸ The 4635-4685 MHz band was identified for reallocation in the NTIA plan in two equal band segments, 4635-4660 and 4660-4685 MHz. The latter band was identified for immediate reallocation in 1994 and the former band was identified for reallocation in 1997 to allow adequate time for re-design of certain military telemetry systems.⁹

In 1995, the Federal Communications Commission completed a rulemaking on the 4660-4685 MHz portion of the band, which was reallocated to the General Wireless Communications Service

⁵ To protect radio astronomy operations in the 4940-4990 MHz band, as well as, the 4990-5000 MHz adjacent band, non-Federal services shall not include air-to-ground or space-to-Earth links. In addition, allocation footnote US257 will be retained regarding continued radio astronomy use of the 4950-4990 MHz band.

⁶ The Departments of Justice, Treasury and Energy have 35, 5, and 4 frequency assignments in the 4940-4990 MHz band, respectively. NTIA anticipates that these agencies will explore re-tuning as the most cost-effective option.

⁷ The relocation of the frequency segment to the upper edge of the CEC RF band provides a benefit to developers of commercial systems that will operate in the segment. The out of band emission levels across the upper half of the relocated segment are reduced when compared with the emission levels across the upper half of the current segment. For reference, see the CEC emission characteristic curve shown in Annex C. Designers of commercial systems that will operate in the band can then implement designs with architectures, filter types, and filter technologies that reduce the overall costs of these systems.

⁸ Moreover, successful bidders will not be required to compensate Federal agencies required to relocate as a result of this action. See Defense Authorization Act of 1998, Pub. L. No. 105-261 (1998)(amending 47 U.S.C. § 923(g)).

⁹ See *supra* note 1 at 5-5.

(GWCS).¹⁰ The Commission announced that GWCS licenses were to be issued by auction in 1998, but the auction was subsequently postponed indefinitely.¹¹ No GWCS licenses have been issued to date. No formal Commission action has been initiated to reallocate the 4635-4660 MHz portion of the band.¹²

Conclusion

Reallocation of the 4635-4685 MHz band would jeopardize the national security interests of the United States, and therefore, pursuant to the authority set forth in 47 U.S.C. §§ 924(b), 926, this band is reclaimed for Federal Government uses and the 4940-4990 MHz band is substituted for reallocation to private sector uses by the Federal Communications Commission. This substitution will offer increased benefits to the public while also significantly reducing adverse impact to the Navy CEC system. Because there will be no adverse effects on private sector spectrum users, this substitution can take effect immediately.

¹⁰ Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, *Second Report and Order*, ET Dkt. No. 94-32, FCC 95-119 (Aug. 2, 1995). The frequency blocks are codified at 47 C.F.R. § 26.103.

¹¹ See "FCC Announces Auction Schedule for the General Wireless Communications Service," Public Notice DA 97-2634 (Dec. 17, 1997); "Wireless Telecommunications Bureau Announces Postponement of General Wireless Communications (GWCS) Auction," Public Notice DA 98-792 (April 24, 1998); see also General Wireless Communications Service (GWCS) Auction Fact Sheet at <http://www.fcc.gov/wtb/auctions/gwcs/gwcs1fst.html>.

¹² The Commission has indicated that it is working on a Notice of Proposed Rulemaking on this portion of the band. See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, *Fourth Report and Order*, ET Dkt. No. 94-32, ¶ 2 (Sept. 24, 1998).